

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-14 (Cancelled)

Claim 15 (Original) An apparatus comprising:

an actuatable vehicle occupant protection device;

at least one multi-layered device including:

an outer layer having a plurality of individually rupturable segments;

a middle layer having a plurality of individual chambers associated in a one-to-one relationship with said rupturable segments of said outer layer and being closed by said rupturable segments, each one of said chambers having contents heatable to increase the pressure in said chamber; and

a base layer having a plurality of individually energizable electric heating elements associated in a one-to-one relationship with said chambers for, when energized, heating the contents of said chambers;

each one of said rupturable segments being rupturable due to an increase in pressure in its associated chamber to enable flow of fluid out of said chamber; and

means for selectively energizing said individually energizable electric heating elements.

Claim 16 (Original) An apparatus as set forth in claim 15 wherein said heatable contents comprises a pyrotechnic material which is ignitable to produce fluid under pressure.

Claim 17 (Withdrawn) An apparatus as set forth in claim 15 wherein said heatable contents comprises a fluid under pressure which is heatable to increase its pressure.

Claim 18 (Original) An apparatus as set forth in claim 15 wherein said electric heating elements are micro-resistors.

Claim 19 (Original) An apparatus as set forth in claim 15 wherein said protection device is an air bag.

Claim 20 (Withdrawn) An apparatus as set forth in claim 15 wherein said multi-layered device is an initiator for a fluid-generating apparatus.

Claim 21 (Original) An apparatus as set forth in claim 15 wherein said multi-layered device is energizable to generate a primary fluid for actuating said protection device.

Claim 22 (Withdrawn) An apparatus as set forth in claim 15 wherein said electric heating elements are reactive bridges.

Claims 23-26 (Cancelled)

Claim 27 (Previously presented) An apparatus
comprising:

an actuatable vehicle occupant protection device;
an array of individually energizable devices for
producing one of inflation fluid and combustion products for
actuating said protection device; and
means for energizing selected ones of said array of
individually energizable devices,

said means for energizing comprising a base that
extends across said array and that includes a plurality of
electric heating elements associated one with each of said
energizable devices,

said means for energizing further comprising control
means for directing electric current into selected ones of
said plurality of electric heating elements to energize said
selected ones of said energizable devices.

Claim 28 (Cancelled)

Claim 29 (Original) An apparatus as set forth in
claim 27 wherein said heating elements are micro-resistors.

Claim 30 (Original) An apparatus as set forth in
claim 27 wherein said individually energizable devices are
pyrotechnic devices ignitable to produce inflation fluid under
pressure.

Claim 31 (Withdrawn) An apparatus as set forth in claim 27 wherein said individually energizable devices are fluid devices energizable to produce inflation fluid under pressure.

Claim 32 (Withdrawn) An apparatus as set forth in claim 27 wherein said electric heating elements are reactive bridges.

Claim 33-39 (Cancelled)

Claim 40 (Previously presented) An apparatus for helping to protect a vehicle occupant, comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device,

wherein said MEMS device includes a substrate on which is formed a plurality of electric heating elements, the electric heating elements being energizable to cause actuation of said protection device.

Claim 41 (Previously presented) An apparatus as set forth in claim 40 wherein each of said plurality of electric heating elements has an associated pyrotechnic charge, said plurality of electric heating elements being selectively

energizable, energizing of an electric heating element
igniting said associated pyrotechnic charge.

Claims 42-50 (Cancelled)

Claim 51 (Previously presented) An apparatus for
helping to protect a vehicle occupant, said apparatus
comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device)
energizable to cause actuation of said protection device, said
MEMS device being a multi-layered structure having abutting
first and second layers, said first layer housing a plurality
of energizable fluid sources and said second layer having
electric circuitry for actuating said plurality of energizable
fluid sources, each one of said plurality of energizable fluid
sources being in contact with said electric circuitry of said
second layer.

Claim 52 (Previously presented) An apparatus as set
forth in claim 51 wherein said first layer includes a block of
material in which a plurality of plenums are located, each
energizable fluid source of said plurality of energizable
fluid sources having an associated plenum of said plurality of
plenums and being housed in said associated plenum.

Claim 53 (Previously presented) An apparatus as set forth in claim 51 further including remotely located vehicle electric circuitry that is operatively connected to said electric circuitry of said second layer controlling actuation of said plurality of energizable fluid sources.

Claim 54 (Previously presented) An apparatus as set forth in claim 51 further including a third layer that abuts the first layer on a side opposite the second layer and that covers said plurality of energizable fluid sources, portions of said third layer being rupturable upon actuation of said plurality of energizable fluid sources.

Claim 55 (Previously presented) An apparatus as set forth in claim 54 wherein the first, second, and third layers of the multi-layered structure are bonded together using an adhesive.

Claim 56 (Previously presented) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device, said MEMS device being a multi-layered structure including a first layer having a plurality of fluid sources and a second layer having means for actuating said plurality of fluid sources,



said first and second layers being bonded together.

Claim 57 (Previously presented) An apparatus as set forth in claim 56 wherein said first and second layers are bonded together using an adhesive.

Claim 58 (Previously presented) An apparatus as set forth in claim 56 wherein said first layer includes a first surface and said second layer includes a second surface, said first and second surfaces being bonded together, said first and second surfaces having outer dimensions that are approximately equal in size.

Claim 59 (Previously presented) An apparatus as set forth in claim 56 further including a third layer for covering said plurality of fluid sources, said third layer being bonded to said first layer on a side opposite said second layer.

Claim 60 (Previously presented) An apparatus as set forth in claim 59 wherein said first and third layers are bonded together using an adhesive.

Claim 61 (Previously presented) An apparatus as set forth in claim 59 wherein said first layer includes a first surface and said second layer includes a second surface, said first and second surfaces being bonded together, said first and second surfaces having outer dimensions that are approximately equal in size.

Claim 62 (Previously presented) An apparatus as set forth in claim 56 wherein said means for actuating said plurality of fluid sources of said second layer includes an electric circuit that is operatively coupled to remotely located vehicle electric circuitry which controls actuation of said plurality of fluid sources.

Claim 63 (Previously presented) An apparatus for helping to protect a vehicle occupant, said apparatus comprising:

an actuatable vehicle occupant protection device;

and

a microelectromechanical system device (MEMS device) energizable to cause actuation of said protection device, said MEMS device including a base portion, an electric circuit formed on a first surface of said base portion and terminal pins extending from said electric circuit and outwardly of a second surface of said base portion, said second surface of said base portion being opposite said first surface.

Claim 64 (Previously presented) An apparatus as set forth in claim 63 further including an inflator housing into which said terminal pins are received for operatively coupling said electric circuit of said base portion of said MEMS device to remotely located vehicle electric circuitry, lead wires operatively connecting said vehicle electric circuitry to said

terminal pins when said terminal pins are received in said inflator housing.

Claim 65 (Previously presented) An apparatus as set forth in claim 64 wherein said MEMS device further includes a plurality of actuatable fluid sources, said vehicle electric circuitry controlling energization of said electric circuitry of said base portion of said MEMS device for actuating said plurality of actuatable fluid sources.

Claim 66 (Previously presented) An apparatus as set forth in claim 65 wherein each of said plurality of actuatable fluid sources is individually actuatable, said vehicle electric circuitry being adapted to control which ones of said plurality of actuatable fluid sources are actuated by said electric circuit of said base portion of said MEMS device.

Claim 67 (New) An apparatus for helping to protect a vehicle occupant, the apparatus comprising:

an inflatable vehicle occupant protection device;
an inflator that includes a plurality of microelectromechanical system devices (MEMS devices), each MEMS device including an array of selectively actuatable inflation fluid sources, each of the actuatable inflation fluid sources being actuatable for providing inflation fluid for inflating the inflatable vehicle occupant protection device; and

vehicle electric circuitry operatively connected to the plurality of MEMS devices and configured for actuating the individual actuatable inflation fluid sources, the vehicle electric circuitry being responsive to received sensory inputs for selectively actuating the actuatable inflation fluid sources of the plurality of MEMS devices.

Claim 68 (New) An apparatus as set forth in claim 67 wherein each actuatable inflation fluid source of the array of actuatable inflation fluid sources for each MEMS device is individually actuatable, the vehicle electric circuitry operable for selectively actuating one or more of the individually actuatable inflation fluid sources.

Claim 69 (New) An apparatus as set forth in claim 67 wherein the inflator further includes a housing, the plurality of MEMS devices including terminal pins for mounting to the housing, the vehicle electric circuitry being operatively connected to the plurality of MEMS devices through the terminal pins.

Claim 70 (New) An apparatus as set forth in claim 69 wherein lead wires extend between the housing and the vehicle electric circuitry for operatively connecting the plurality of MEMS devices to the vehicle electric circuitry.

Claim 71 (New) An apparatus as set forth in claim 67 wherein each MEMS device of the plurality of MEMS devices

includes a base having electric circuitry that is operatively connected to the vehicle electric circuitry, the electric circuitry of the base including means for actuating the actuatable inflation fluid sources.

Claim 72 (New) An apparatus as set forth in claim 71 wherein the means for actuating the actuatable inflation fluid sources includes a plurality of individually energizable electric heating elements, each one of the actuatable inflation fluid sources having an associated one of the plurality of individually energizable electric heating elements.

Claim 73 (New) An apparatus as set forth in claim 67 wherein each of the MEMS devices has a length of approximately one half of an inch and a width of approximately one half of an inch.

Claim 74 (New) An apparatus as set forth in claim 67 wherein each of the MEMS devices includes a plurality of plenums, each one of the plurality of plenums storing an associated one of the actuatable inflation fluid sources, each one of the plurality of plenums having a depth of up to ten millimeters.

Claim 75 (New) An apparatus as set forth in claim 73 wherein each of the plurality of plenums is cylindrical and has a diameter of up to 1.4 millimeters.



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